REMARKS

This application has been reviewed in light of the Office Action dated May 3, 2007. Claims 1-3, 8-12, 17-21, 26-30, 35-39, 44-48 and 53-55 are pending, with claims 4-7, 13-16, 22-25, 31-34, 40-43 and 49-52 having previously been canceled, without prejudice or disclaimer. By this Amendment, claim 1 has been amended to clarify the claimed subject matter. Accordingly claims 1-3, 8-12, 17-21, 26-30, 35-39, 44-48 and 53-55 are presented for reconsideration, with claims 1, 10, 19, 28, 37 and 46 being in independent form.

Claims 1, 3, 10, 12, 19, 21, 28, 30, 37, 39, 46, 48 and 55 were rejected under 35 U.S.C. §103(a) as purportedly unpatentable over Wada (JP-10-333852) in view of Hashimoto (US 2002/0060675 A1). Claims 8, 9, 17, 18, 26, 27, 35, 36, 44, 45, 53 and 54 were rejected as purportedly unpatentable under 35 U.S.C. §103(a) over Wada in view of Hashimoto and further in view of Venable. Claims 2, 11, 20, 29, 38 and 47 were rejected under 35 U.S.C. §103(a) as purportedly unpatentable over Wada in view of Hashimoto and further in view of McIntosh, "POSTSCRIPT: A Page Description Language".

Applicant has carefully considered the Examiner's comments and the cited art, and respectfully submits that independent claims 1, 10, 19, 28, 37 and 46 are patentable over the cited art, for at least the following reasons.

This application relates to an improved technique devised by applicant for performing an image overlay process wherein graphic rendering instructions are sequentially processed such that in some instances, a first image to be rendered based on first rendering data by a first graphic rendering instruction is overlaid by a second image to be rendered based on second rendering data by a second graphic rendering instruction.

In the improved approach devised by Applicant, the image processing apparatus (a)

detects image overlay (that is, the first image is overlaid by the second image), and then (b) modifies the first rendering data to omit the portion to be overlaid by the second original image, (c) draws an output image based on the modified first rendering data in which the specified portion of the first original image is deleted, and (d) stores the modified first rendering data and the second rendering data into the memory. Further, if the second original image and the first original image have no overlaid portion, the first rendering data is rendered and upon rendering said first rendering data, the second rendering data being processed is then stored in the memory. Thus, communication and processing can be accelerated and resources can be conserved (as compared to conventional approaches wherein each of the first and second rendering data is stored in its entirety in memory and processed). Each of independent claims 1, 10, 19, 28, 37 and 46 addresses these features, as well as additional features.

Wada, as understood by Applicant, proposes an approach to image processing that includes (i) an intermediate data generating means which generates intermediate data whose abstraction is higher than that of a data structure capable of plotting output, (ii) a development processing means for developing intermediate data into plotting data, and (iii) an intermediate data distributing means judging whether or not the intermediate data has an area overlapping undeveloped intermediate data, and distributing the intermediate data without any overlapped area to the development processing means based on a priority order.

As further understood by Applicant, the intermediate data distributing means in Wada (element 20) consists of a fetch means (element 21) for taking out intermediate data from the intermediate data generating means, an object buffer (element 22) to hold intermediate data, an overlap judging means (element 23), and a priority decision means (element 24). Wada, in paragraph [0025] to [0028], proposed that the object buffer holds in memory each of the

intermediate data generated by the intermediate data generating means whereby the priority decision process then determines, based on the result of the overlap judging means, the priority in which each of the stored intermediate data is distributed from the object buffer to the development processing means.

In contrast to Wada, the present invention is directed towards not only accelerating an image overlay process **but also** conserving memory resources consumed in this process. The approach proposed by Wada does consume memory resource and instead generates each of first and second (or additional) intermediate data and stores each of the first and second (or additional) intermediate data into an object buffer prior to any overlap processing and rendering of the stored intermediate data.

In contrast, in the subject matter of claim 1 of the present application, a graphic overlay processing unit is utilized to achieve the objects of accelerating image overlay processing and conserving memory resources.

The graphic overlay processing unit can be comprised of a graphic overlay detection unit and a first (i.e., immediately preceding) graphic data memory, which together sequentially processes and stores only first and second rendering data. The graphic overlay processing unit determines whether a second image rendered based on second rendering data to be processed and a first image based on a first rendering data stored in the memory have an overlaid portion. When it is determined that the second image to be processed and the first image stored in the memory have an overlaid portion, the first rendering data is modified to omit the overlaid portion. An output image is drawn based on the modified first rendering data in which the overlaid portion of the first image is deleted, and this modified first rendering data is then stored in memory (to be rendered subsequently).

When it is determined that the second image to be processed and the first image based on the first intermediate data stored in the memory have no overlaid portion, the first intermediate data stored in the memory is rendered. Upon rendering the first image data stored in the memory, the second image data presently being processed is then stored in the memory for future use. This technique of processing first and second rendering data can then be repeatedly performed for images to be input, thus minimizing memory resource consumption.

Wada and the remaining cited references fail to teach or suggest the subject matter of claim 1 as amended.

Specifically, Applicant does not find teach or suggestion in the cited art of an image processing apparatus comprising an overlay detector and a memory, wherein the overlay detector specifies a portion of the first original image to be overlaid by the second original image upon detecting an overlay of the first and second original images, modifies said first rendering data to omit the specified portion, draws a third output image based on the modified first rendering data in which the specified portion of the first original image is deleted, and stores the modified first rendering data and the second rendering data into the memory, and wherein if the second original image and the first original image have no overlaid portion, said image processing apparatus renders the first rendering data, and upon rendering said first rendering data, the overlay detector stores the second rendering data presently being processed into the memory.

Independent claims 10, 19, 28, 37 and 46 are patentably distinct from the cited art for at least similar reasons.

Accordingly, for at least the above-stated reasons, Applicant respectfully submits that independent claims 1, 10, 19, 28, 37 and 46, and the claims depending therefrom, are patentable over the cited art.

In view of the remarks hereinabove, Applicant submits that the application is now in condition for allowance, and earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such petition. The Office is hereby authorized to charge any fees that are required in connection with this amendment and to credit any overpayment our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,

PAUL TENG, Reg. No. 40,837
Attorney for Applicant
Cooper & Dunham LLP
Tel. (212) 278-0400